

WHAT IS CLAIMED IS

1. A semiconductor device comprising: a capacitor formed above a semiconductor substrate and including a storage electrode, a capacitor dielectric film formed on the storage electrode and a plate electrode formed on the capacitor dielectric film,

the storage electrode having an upper end rounded and having a larger thickness at the upper end than a thickness in the rest region.

2. A semiconductor device according to claim 1, wherein

the storage electrode has a thickness gradually thickened toward to the upper end.

3. A semiconductor device according to claim 1, wherein

the storage electrode has a side surface tilted and has a periphery gradually widened toward to the upper end.

4. A semiconductor device according to claim 2, wherein

the storage electrode has a side surface tilted and has a periphery gradually widened toward to the upper end.

5. A semiconductor device according to claim 1, wherein

the storage electrode has a cylindrical shape.

6. A semiconductor device according to claim 2, wherein

the storage electrode has a cylindrical shape.

7. A semiconductor device according to claim 5,
wherein

the storage electrode has a border between the inside
surface and a bottom surface rounded.

8. A semiconductor device according to claim 6,
wherein

the storage electrode has a border between the inside
surface and a bottom surface rounded.

9. A semiconductor device comprising: a capacitor
formed above a semiconductor substrate and including a
storage electrode, a capacitor dielectric film formed on
the storage electrode and a plate electrode formed on the
capacitor dielectric film,

the storage electrode being formed of a metal film and
having a larger thickness at the upper end than a thickness
in the rest region.

10. A semiconductor device according to claim 9,
wherein

the storage electrode has a thickness gradually
thickened toward to the upper end.

11. A semiconductor device comprising: a capacitor
formed above a semiconductor substrate and including a
storage electrode, a capacitor dielectric film formed on
the storage electrode and a plate electrode formed on the
capacitor dielectric film,

the storage electrode being formed of a metal film and having an upper end rounded.

12. A semiconductor device according to claim 11, wherein

the storage electrode has a thickness gradually thickened toward to the upper end.

13. A method for fabricating a semiconductor device comprising the steps of:

forming an insulation film above a semiconductor substrate;

forming an opening in the insulation film;

forming a storage electrode electrically connected to the semiconductor substrate and formed in the opening;

conducting a heat treatment to round an upper end of the storage electrode;

forming a capacitor dielectric film on the storage electrode; and

forming a plate electrode on the capacitor dielectric film.

14. A method for fabricating a semiconductor device according to claim 13, further comprising, after the step of forming the storage electrode, the step of:

removing the insulation film.

15. A method for fabricating a semiconductor device according to claim 13, wherein

in the step of forming the storage electrode, the

storage electrode is formed with a liner film formed on at least a side surface of the opening interposed therebetween.

16. A method for fabricating a semiconductor device according to claim 14, wherein

in the step of forming the storage electrode, the storage electrode is formed with a liner film formed on at least a side surface of the opening interposed therebetween.

17. A method for fabricating a semiconductor device according to claim 15, further comprising, before the step of conducting the heat treatment, the step of:

etching the liner film by a required amount from a surface side of the insulation film.

18. A method for fabricating a semiconductor device according to claim 16, further comprising, before the step of conducting the heat treatment, the step of:

etching the liner film by a required amount from a surface side of the insulation film.

19. A method for fabricating a semiconductor device according to claim 13, wherein

in the step of forming the storage electrode, the storage electrode of a cylindrical shape formed along a side surface and a bottom surface of the opening is formed.

20. A method for fabricating a semiconductor device according to claim 14, wherein

in the step of forming the storage electrode, the storage electrode of a cylindrical shape formed along a side surface and a bottom surface of the opening is formed.